

Functional Genomics					
Identification number	Workload	Credit points	Term of studying	Frequency of occurrence	Duration
MN-B-SM (A 4)	360 h	12 CP	1 <sup>st</sup> or 2 <sup>nd</sup> term of studying	Summer term, 2 <sup>nd</sup> half	7 weeks
<b>1</b>	<b>Type of lessons</b>		<b>Contact times</b>	<b>Self-study times</b>	<b>Intended group size*</b>
	a) Lectures		22 h	50 h	max. 12
	b) Practical/Lab		150 h	100 h	max. 2
	c) Seminar		8 h	30 h	max. 2
<b>2</b>	<b>Aims of the module and acquired skills</b> Students who successfully completed this module ... <ul style="list-style-type: none"> <li>• have acquired detailed knowledge in the concepts of functional genomics and the role of genome regulation in physiology and disease.</li> <li>• have acquired experimental skills in state-of-the art methods in genomics, cell biology and molecular biology and can independently carry out small scientific projects related to the topic of the module.</li> <li>• have learned how to present research results in oral and written form and to critically discuss scientific publications related to the topic of the module on a professional level.</li> <li>• are able to transfer skills acquired in this module to other fields of biology.</li> </ul>				
<b>3</b>	<b>Contents of the module</b> <ul style="list-style-type: none"> <li>• Evolution of genomes and traits</li> <li>• Regulation of nuclear and chromatin architecture</li> <li>• Epigenetic regulation of gene expression</li> <li>• Principles of transcriptional regulation</li> <li>• Identification of longevity genes</li> <li>• Model organisms for functional genomics and ageing research</li> <li>• Next generation sequencing methods for genomic analyses</li> <li>• Genetic screening</li> <li>• Genetic reprogramming</li> <li>• Chromatin immunoprecipitation</li> <li>• Cloning methods</li> <li>• Cell biology, immunological staining methods, microscopy</li> </ul>				
<b>4</b>	<b>Teaching/Learning methods</b> <ul style="list-style-type: none"> <li>• Lectures; Practical/Lab (Project work); Seminar; Guidance to independent research; Training on presentation techniques in oral and written form</li> </ul>				

Functional Genomics (MN-B-SM [A 4]) continued

5	<p><b>Requirements for participation</b></p> <p>Enrollment in the Master´s degree course "Biological Sciences" or in the Master´s degree course "Biochemistry"</p>
6	<p><b>Type of module examinations</b></p> <p>The final examination consists of two parts: Two hours written examination about topics of the lectures and the practical/lab part (70 % of the total module mark) and oral presentation (30 % of the total module mark)</p>
7	<p><b>Requisites for the allocation of credits</b></p> <p>Regular and active participation; Passed seminar paper; Each examination part at least "sufficient" (see appendix of the examination regulations for details)</p>
8	<p><b>Compatibility with other Curricula</b></p> <p>Biological subject module in the Master´s degree course "Biochemistry"</p>
9	<p><b>Significance of the module mark for the overall grade</b></p> <p>In the Master´s degree course "Biological Sciences": 15 % of the overall grade (see also appendix of the examination regulations)</p>
10	<p><b>Module coordinator</b></p> <p>Dr. Martin Graef, phone 379 70470, e-mail: martin.graef@age.mpg.de</p>
11	<p><b>Additional information</b></p> <p><b>Subject module</b> of the Master´s degree course "Biological Sciences", <b>Specialization:</b> (A) Mechanisms of Aging and Aging Associated Diseases</p> <p><b>Participating faculty:</b> Dr. H. Bazzi, Dr. M. Denzel, Dr. M. Graef, Dr. L. Kurian, Dr. L. Pernas, Dr. S. Steculorum, Dr. P. Tessarz, Dr. T. Wunderlich</p> <p><b>Literature:</b></p> <ul style="list-style-type: none"> <li>Information about textbooks and other reading material will be given on the ILIAS representation of the course (<a href="https://www.ilias.uni-koeln.de/ilias/goto_uk_cat_2815610.html">https://www.ilias.uni-koeln.de/ilias/goto_uk_cat_2815610.html</a>)</li> </ul> <p><b>General time schedule:</b> Week 1 (Mon.-Fri.): Introduction to Functional Genomics (lectures), safety lecture and lab projects; Week 2-6 (Mon.-Fri.): Lectures, seminars and lab projects; Week 7 (Mon.-Fri): Preparation for the written examination</p> <p><b>Note:</b> The module contains hand-on laboratory work conducted individually and is taught in research laboratories. The module does not contain computer-based practicals/research as a main component.</p> <p><b>Introduction to the module:</b> June 07, 2021 at 9:00 a.m., MPI Age, Joseph-Stelzmann-Str. 9 b, 50931 Köln, seminar room 1 (ground floor) or online (in this case, further information/link will be sent to your Smail-Account); for preparation to the module before this introduction see ILIAS link under literature.</p> <p><b>Written examination:</b> July 23, 2021, second/supplementary examination August 27, 2021; the latter date may vary if students and module coordinator agree. More details will be given at the beginning of the module.</p>

\* 10 students from the Master´s degree course "Biological Sciences" and 2 students from the Master´s degree course "Biochemistry".

**Corona note!** Depending on the Corona situation during the summer term, practical work may be skipped either totally or in part. In this case, some or all practical parts will be replaced by adequate alternatives so that (i) the workload and (ii) the principle content of the modules remained unchanged.